

**OPTICAL FIBER TRANSMISSION SYSTEM  
WITH NOISE LOADED IDLER CHANNELS  
ABSTRACT OF THE INVENTION**

A wavelength division multiplex optical system includes a WDM combiner to provide a source signal, at least one transmitter coupled to an input of the WDM combiner, a broadband noise source, and a filter coupled between the broadband noise source and another input of the WDM combiner. In one embodiment, the filter is an optical notch filter. In an alternative embodiment, the filter includes a WDM demultiplexer coupled through plural filters to provide a plurality of noise signals and a WDM multiplexer coupled through at least one filter of the plural filters to respective noise signals.